CLAIMS

What is claimed is:

1. A speech recognition system, comprising:

a first section having an input for receiving a spoken command and providing a polynomial expansion of a feature vector generated for the spoken command in a non-training mode;

a second section that provides a polynomial expansion of a feature vector generated in a training mode; and

a third section having a correlator block that correlates the polynomial expansion of the feature vector from the first section with the polynomial expansion of the feature vector from the second section, wherein the third section performs a Hidden Markov Model statistical analysis of a correlated feature vector.

2. The speech recognition system of claim 1, wherein the third section further includes:

a sequence vector block having an input for receiving a signal from the correlator block;

an HMM table having an output; and

a Veterbi block having a first input coupled to the sequence vector block, a second input coupled to the HMM table, and an output that provides a state sequence that maximizes a probability of identifying the spoken command.

3. The speech recognition system of claim 1, wherein the first section further includes:

a sampler block having an input for receiving the spoken command;

a feature extractor having an input coupled to an output of the sampler block; and

a polynomial expansion block having an input coupled to the feature extractor and an output that provides the polynomial expansion of the feature vector generated for the spoken command.

4. The speech recognition system of claim 1, wherein the second section further includes:

a feature vector generator;

a polynomial expansion block having an input coupled to the feature vector generator;

a vector quantizer block having an input coupled to an output of the polynomial expansion block; and

a processing block having an input coupled to an output of the vector quantizer block and an output that provides the polynomial expansion of the feature vector generated in the training mode.

5. A method of identifying a spoken command, the method comprising:

generating speech building blocks in a training mode that represent a specific language by providing a polynomial expansion of first higher-order vectors;

generating second higher-order vectors from a speech input in a non-training mode;

correlating the first higher-order vectors generated in the training mode with the second higher-order vectors generated from the spoken command in the non-training mode; and

generating a statistical analysis based on a Hidden Markov Model to identify the spoken command.

6. The method of claim 5, wherein generating speech building blocks further includes expanding the recognizer's vocabulary into a set of at least 4^{th} order vectors in the training mode.

7. The method of claim 5, wherein generating the higher-order vectors from a speech input in a non-training mode includes generating at least 4^{th} order vectors.

8. The method of claim 5, wherein generating speech building blocks in a training mode further includes:

quantizing the first higher-order vectors to create a single command vector for the spoken command; and

processing the single command vector to provide the speech building blocks.

9. The method of claim 5, wherein generating second higher-order vectors further includes:

representing the spoken command by a plurality of spoken feature

vectors;

summing the plurality of spoken feature vectors to create a single command vector for the spoken command; and

generating a polynomial expansion of the single command vector.

10. A method of identifying a spoken command, the method comprising:

providing a training mode for sampling speech that includes,

extracting a first set of feature vectors from the sampled speech,

generating a polynomial expansion of the first set of feature vectors, and

quantizing the polynomial expansion;

providing a non-training mode for a speech input that includes,

extracting a second set of feature vectors from the speech input, and

generating a polynomial expansion of the second set of feature vectors;

correlating the first higher-order vectors generated in the training mode with the second higher-order vectors generated from the spoken command in the non-training mode; and

providing a statistical analysis based on a Hidden Markov Model to identify the spoken command.

11. The method of claim 10, further comprising averaging consecutive polynomial expansions prior to generating a polynomial expansion of the first set of feature vectors.